

***Chamaesyce ophiolitica* (Euphorbiaceae), a new and endangered species endemic to serpentine vegetation in central Queensland**

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Summary

Forster, Paul I. *Chamaesyce ophiolitica* P.I.Forst. (Euphorbiaceae), a new and endangered species endemic to serpentine vegetation in central Queensland. *Austrobaileya* 5(4):711–714 (2000). The new species *Chamaesyce ophiolitica* is described and illustrated. Information is provided on its distribution, habitat and conservation status. Its affinities are with the *C. drummondii* complex. *C. ophiolitica* is restricted to serpentine soils north of Rockhampton in central Queensland. The species is known from three extant localities and fulfils the criteria to be listed as an Endangered species.

Keywords: *Chamaesyce ophiolitica*, Euphorbiaceae, serpentine.

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Introduction

Revisions of the Australian species of *Chamaesyce* S.F.Gray and *Euphorbia* L. were undertaken by Hassall (1977a), although only the latter was formally published (Hassall 1977b). New combinations in *Chamaesyce* were published by Hassall (1976) and for some additional Queensland species by Forster & Henderson (1995) to enable use of the generic name in the most recent census of Queensland plants (Forster & Henderson 1997). Unfortunately no overall revision of the Australian species of *Chamaesyce* has been published.

The species that is the subject of this short paper was first collected in 1920 by Bill Francis at the Warren State Farm north of Rockhampton and his specimen was annotated by Hassall as being of affinity to *Chamaesyce petala* (Ewart & L.R.Kerr) P.I.Forst. & R.J.F.Hend., a species that occurs in northern Australia in the Northern Territory. Apart from a collection in 1960, this plant was only really brought to attention with a number of collections in the late 1980's that coincided with an increase in attention to the floristics and vegetation communities that occur on serpentine soils and rocks in central Queensland (Batianoff & Specht 1992; Batianoff *et al.* 1990, 1991, 1997, 2000).

At least eighteen species of plants are endemic to the serpentine vegetation of central Queensland with a number of these being of significance for conservation and listed as rare or threatened taxa (Batianoff *et al.* 2000). The species described here has been rarely collected and is directly threatened by changes to the serpentine landscape due to mining and agriculture. It is formally named in this paper to expedite efforts to ensure its conservation and to draw attention to an otherwise obscure existence.

Taxonomy

***Chamaesyce ophiolitica* P.I.Forst., sp. nov., a**
Chamaesyce petala (Ewart & L.R.Kerr)
P.I.Forst. & R.J.F.Hend. folii lamina
cordato-elliptica usque obovata
(adversum laminam oblongam), cyathii
bracteis truncatis usque oblongo-
truncatis (adversum bracteas
spathulatas), stipulis infirme evolutis et
sparse ramosis (adversum stipulas bene
evolutas et valde fimbriatas) et seminibus
multo majoribus (1.7–1.8 mm longis × 1–
1.1 mm latis × 1–1.1 mm crassis contra
circa 1 × 0.7 × 0.7 mm) differt. **Typus:**
Queensland. PORT CURTIS DISTRICT: west
of Canoona, 1 March 1994, *P.I.Forster*
PIF15042 & *A.R.Bean* (holo: BRI; iso: AD,
DNA, MEL).

Herbaceous annual, monoecious, of prostrate habit and up to 5 cm high and 20 cm across, with white latex. Stems branching divaricately, lower stems up to 2 mm diameter, upper leaf-bearing stems up to 1 mm diameter, glabrous or with sparse to dense erect trichomes to 0.3 mm long; interpetiolar stipules deeply divaricate to subulate, 0.4–0.8 mm long, glabrous. Leaves discolorous; petioles 0.8–1 mm long, 0.3–0.4 mm wide, channelled on top, glabrous or with sparse trichomes; lamina cordate-elliptic to obovate, often unequal at base, 2–12 mm long, 1.3–11 mm wide, glabrous, or with scattered to sparse trichomes on upper surface and sparse to dense trichomes on the lower surface, glaucous blue-green above, paler below; margins entire or very weakly serrulate; apex acute to rounded; base unequal, cordate to lobate. Cyathia solitary or occasionally paired; peduncles 0.2–1.5 mm long, 0.5–0.7 mm diameter, glabrous or with scattered to dense trichomes. Cyathium 2–2.5 mm diameter; bracts 4 or 5, truncate to oblong-truncate, irregularly fimbriate, 0.4–0.8 mm long, 0.9–1 mm wide, white; glands 4 or 5, elliptic to oblong-reniform, 0.4–0.5 mm long, 0.7–1 mm wide, green; trichomes sparse to dense and up to 0.5 mm long. Male flowers: filament 1.5–1.7 mm long, c. 0.3 mm wide, flattened, anther reniform, c. 0.4 mm long and 0.3 mm wide. Female flower: ovary trilobed, up to 1 mm long and 1.2 mm diameter, with dense trichomes; styles 3, 0.5–1 mm long, bilobed for 0.2–0.5 mm with the tips recurved, with sparse trichomes. Fruit trilobed, c. 3 mm long and 3 mm diameter, with dense trichomes. Seeds obconical-trigonous, 1.7–1.8 mm long, 1–1.1 mm wide and 1–1.1 mm thick, fissure 1.5–1.6 mm long, pale brown. Fig. 1.

Other specimens examined. **Queensland.** PORT CURTIS DISTRICT South Percy Island, 50 km NE of Arthur Point, Shoalwater Bay, Oct 1989, *Batianoff* 11422 et al. (BRI); W of Canoona, Jan 1988, *Forster* PIF3393 (BRI); Warren State Farm, Mar 1920, *Francis* AQ202944 (BRI); On Rockhampton - Marlborough road, May 1960, *Johnson* 1720 (BRI); Mt Wheeler, Rockhampton, Jan 1989, *Specht* 3 & *Reeves* (BRI).

Notes: *Chamaesyce ophiolitica* is compared to *C. petala* which appears to be the most similar species on morphological characters. *C. ophiolitica* differs from *C. petala* in the leaves being cordate-elliptic to obovate (versus oblong), the cyathial bracts more truncate to

oblong-truncate (versus spatulate), the poorly developed stipules are little-branched (versus well developed stipules that are fimbriate) and much larger seeds ($1.7\text{--}1.8 \times 1\text{--}1.1 \times 1\text{--}1.1$ mm versus c. $1 \times 0.7 \times 0.7$ mm). A comparison may also be made to the widespread *C. drummondii* (Boiss.) D.C.Hassall which differs in the oblong leaves, well developed stipules (0.8–2 mm long), poorly developed stipules with an uneven margin and smaller seeds (c. $1 \times 0.7 \times 0.7$ mm).

The whole species complex which includes *Chamaesyce drummondii* is in need of a critical biosystematic revision. This was undertaken in part by Hassall (1977a) but is now in need of updating. The distribution of *C. ophiolitica* is allopatric to that of *C. petala* and it is perhaps more likely that the new species is derived from the widespread *C. drummondii*.

There is some interesting variation in the limited material to hand of *C. ophiolitica*. Within the same population it is possible to obtain individuals that are either glabrous or with dense coverage of trichomes on the foliage and some floral parts. These individuals appear to grow in close proximity to one another and further study is required to ascertain whether this is a simple case of a single character switch or is correlated with more fundamental differences. Serpentine soils present a relatively severe environment for plants and it has been demonstrated elsewhere that morphologically distinct races of the same species can coexist and maintain their distinctive nature over time (Rajakaruna & Bohm 1999).

Distribution: *Chamaesyce ophiolitica* has been collected from four localities in central Queensland north of Rockhampton. However, only three of these collections occurred within the last 40 years.

Habitat: This new species is restricted to upper slopes and sides of low ridges on soils derived from serpentine rocks and occurs in stony situations in open woodland dominated by tree species such as *Eucalyptus fibrosa* subsp. (Glen Geddes M.I. Brooker 10230) and *Corymbia xanthope* (A.R. Bean & Brooker) K.D. Hill & L.A.S. Johnson. These serpentine

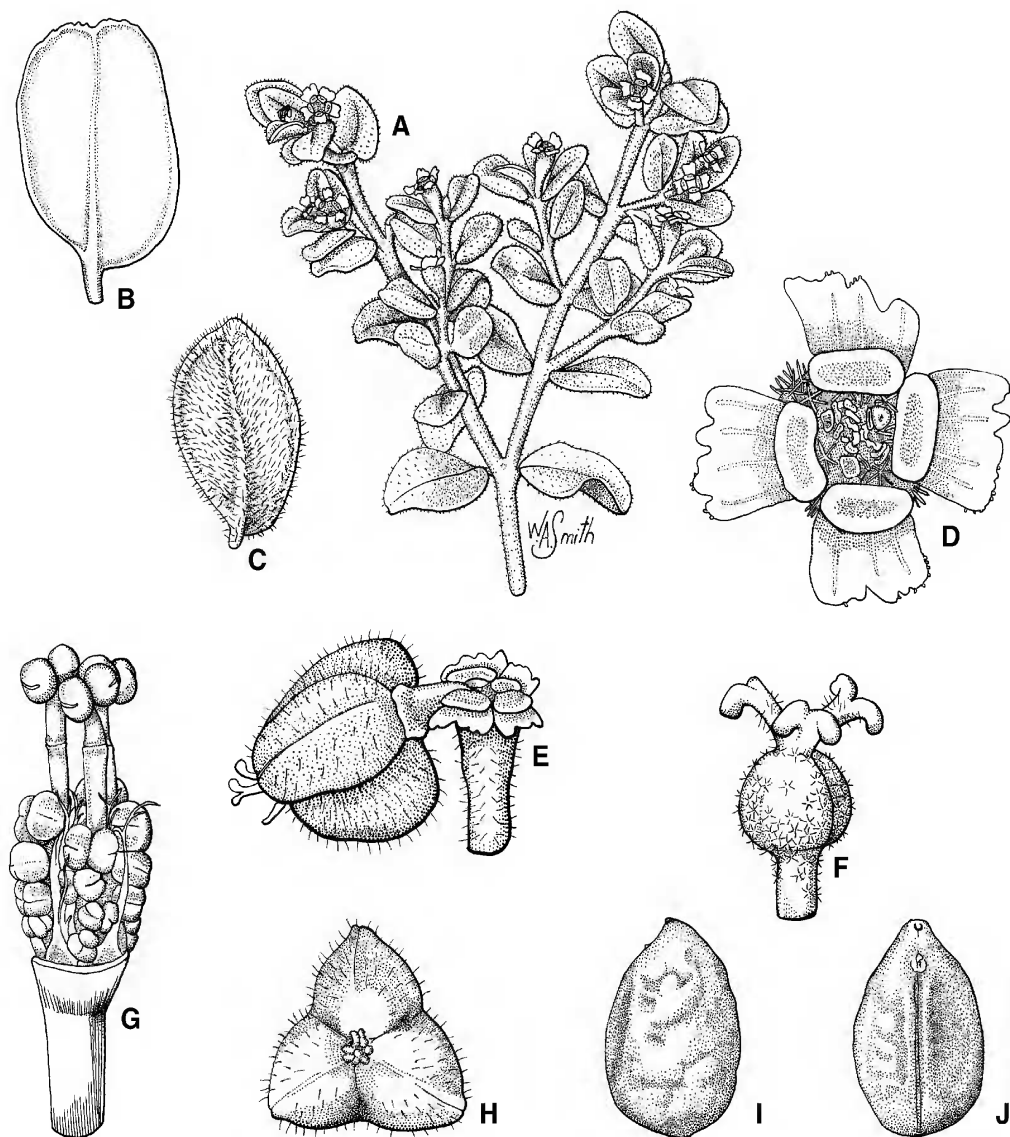


Fig. 1. *Chamaesyce ophiolitica*. A. habit of flowering shoot. $\times 2$. B. undersurface of glabrous leaf. $\times 4$. C. undersurface of pubescent leaf. $\times 8$. D. cyathium from above. $\times 16$. E. cyathium and fruit from side. $\times 8$. F. female flower from side. $\times 16$. G. cyathium with cyathial bracts and glands removed showing male flowers. $\times 16$. H. face view of fruit. $\times 8$. I. side view of seed. $\times 16$. J. ventral view of seed. $\times 16$. All from *Forster 15042* (BRI). Del. W. Smith.

landscapes cover c. 1000 km² in central Queensland (Batianoff et al. 2000).

Conservation Status: *Chamaesyce ophiolitica* is currently known from only three localities, one (South Percy Island) that is National Park. Using the IUCN Red List categories this species can be classified as Endangered on the criteria - B. Extent of occurrence estimated to be less than 5000 km² or area of occupancy estimated to be less than 500 km², and estimates indicating any two of the following:

1. Severely fragmented or known to exist at no more than five locations.
2. Continuing decline, inferred, observed or projected, in any of the following: (a) extent of occurrence, (b) area of occupancy, (c) area, extent and/or quality of habitat, (d) number of locations or subpopulations.

C. Population estimated to number less than 2500 mature individuals and either: 1. An estimated continuing decline of at least 20% within 5 years or 2 generations, whichever is longer.

C. ophiolitica is a very insignificant annual herb and it is likely that further populations may be found. As yet, the effects of fire and other disturbances on its ecology are unknown. It should be noted that the vegetation on serpentine soils has now been intensively studied (work of Batianoff and collaborators) and that this species has been shown to be sparsely distributed in the area. A relevant comparison may be made with the recently described *Bursaria reevesii* L.Cayzer & M.D.Crisp, a small shrub that is only known from a handful of localities on the serpentine (Cayzer et al. 1999).

Etymology: The specific epithet refers to the occurrence of this species on soils derived from serpentine.

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